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Endothelin-1 is an autocrine/paracrine growth factor for human cancer cell lines. *M. Shichiri, Y. Hirata, T. Nakajima, K. Ando, T. Imai, M. Yanagisawa, T. Masaki, and F. Marumo* 1867

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Stabilization of F-actin prevents cAMP-elicited Cl^- secretion in T84 cells. *M. Shapiro, J. Matthews, G. Hecht, C. Delp, and J. L. Madara* 1903

Decrease in skin collagen glycation with improved glycemic control in patients with insulin-dependent diabetes mellitus. *T. J. Lyons, K. E. Bailie, D. G. Dyer, J. A. Dunn, and J. W. Baynes* 1910

Inhibition of immune functions by antiviral drugs. *W. Heagy, C. Crumpacker, P. A. Lopez, and R. W. Finberg* 1916

Staphylococcus epidermidis induces complement activation, tumor necrosis factor and interleukin-1, a shock-like state and tissue injury in rabbits without endotoxemia. Comparison to *Escherichia coli*. *G. Wakabayashi, J. A. Gelfand, W. K. Jung, R. J. Connolly, J. F. Burke, and C. A. Dinarello* 1925

Lipopolysaccharide from *Escherichia coli* reduces antigen-induced bronchoconstriction in actively sensitized guinea pigs. *E. Vannier, J. Lefort, A. Lellouch-Tubiana, B. Terlain, and B. B. Vargaftig* 1936

Dr(a−) polymorphism of decay accelerating factor. Biochemical, functional, and molecular characterization and production of allele-specific transfectants. *D. M. Lublin, E. S. Thompson, A. M. Green, C. Levene, and M. J. Telen* 1945

Interaction of baroreceptor and chemoreceptor reflex control of sympathetic nerve activity in normal humans. *V. K. Somers, A. L. Mark, and F. M. Abboud* 1953

Eosinophils altered phenotypically and primed by culture with granulocyte/macrophage colony–stimulating factor and 3T3 fibroblasts generate leukotriene C_4 in response to FMLP. *W. F. Owen, Jr., J. Petersen, and K. F. Austen* 1958

Effects of inhibition of nitric oxide formation on basal vasomotion and endothelium-dependent responses of the coronary arteries in awake dogs. *A. Chu, D. E. Chambers, C.-C. Lin, W. D. Kuehl, R. M. J. Palmer, S. Moncada, and F. R. Cobb* 1964

Staphylococcal endo-β-*N*-acetylglucosaminidase inhibits response of human lymphocytes to mitogens and interferes with production of antibodies in mice. *S. Valisena, P. E. Varaldo, and G. Satta* 1969

Thyroid hormone resistance syndrome. Inhibition of normal receptor function by mutant thyroid hormone receptors. *V. K. K. Chatterjee, T. Nagaya, L. D. Madison, S. Datta, A. Rentoumis, and J. L. Jameson* 1977

Platelets of the Wistar Furth rat have reduced levels of alpha-granule proteins. An animal model resembling gray platelet syndrome. *C. W. Jackson, N. K. Hutson, S. A. Steward, N. Saito, and E. M. Cramer* 1985

Prostaglandin E_2 inhibits sodium transport in rabbit cortical collecting duct by increasing intracellular calcium. *R. L. Hébert, H. R. Jacobson, and M. D. Breyer* 1992

Inhibition by atrial and brain natriuretic peptides of endothelin-1 secretion after stimulation with angiotensin II and thrombin of cultured human endothelial cells. *M. Kohno, K. Yasunari, K. Yokokawa, K.-i. Murakawa, T. Horio, and T. Takeda* 1999

Amino acid substitution ($Ile^{194} \rightarrow Thr$) in exon 5 of the lipoprotein lipase gene causes lipoprotein lipase deficiency in three unrelated probands. Support for a multicentric origin. *H. E. Henderson, Y. Ma, M. F. Hassan, M. V. Monsalve, A. D. Marais, F. Winkler, K. Gubernator, J. Peterson, J. D. Brunzell, and M. R. Hayden* 2005

Shape changes, exocytosis, and cytosolic free calcium changes in stimulated human eosinophils. *P. Kernen, M. P. Wymann, V. von Tscharner, D. A. Deranleau, P.-C. Tai, C. J. Spry, C. A. Dahinden, and M. Baggiolini* 2012

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